

OCT 12 2004

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To: Commissioner for Patents for Examiner James D. Rutten Group Art Unit 2122	Facsimile No.: 703/872-9306
From: Michele Morrow Legal Assistant to Gerald H. Glanzman	No. of Pages Including Cover Sheet: 25
Message: Enclosed herewith: <ul style="list-style-type: none">• Transmittal Document; and• Appeal Brief.	
Re: Application No. 09/726,290 Attorney Docket No: AUS9-2000-0449-US1	
Date: Tuesday, October 12, 2004	
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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OCT 12 2004

In re application of: **Kehne et al.**

Serial No.: 09/726,290

Filed: November 30, 2000

For: Method and Apparatus for Updating New Versions of Firmware in the Background

[illegible]

Group Art Unit: 2122

Examiner: Rutten, James D.

Attorney Docket No.: AUS9-2000-0449-US1

Certificate of Transmission Under 37 C.F.R. § 1.8(a)

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By:

Michele Monow
Michele Monow

35525

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Commissioner for Patents
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Sir:

ENCLOSED HEREWITH:

- Appcal Brief (37 C.F.R. 41.37).

A fee of \$340.00 is required for filing an Appellant's Brief. Please charge this fee to IBM Corporation Deposit Account No. 09-0447. No additional fees are believed to be necessary. If, however, any additional fees are required, I authorize the Commissioner to charge these fees which may be required to IBM Corporation Deposit Account No. 09-0447. No extension of time is believed to be necessary. If, however, an extension of time is required, the extension is requested, and I authorize the Commissioner to charge any fees for this extension to IBM Corporation Deposit Account No. 09-0447.

Respectfully submitted,

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Docket No. AUS9-2000-0449-US1

PATENT

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For: Method and Apparatus for
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Group Art Unit: 2122

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By:

Michele Morrow
Michele Morrow

APPEAL BRIEF (37 C.F.R. 41.37)

This brief is in furtherance of the Notice of Appeal, filed in this case on August 10, 2004.

The fees required under § 41.20(B)(2), and any required petition for extension of time for filing this brief and fees therefore, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

(Appeal Brief Page 1 of 23)
Kehne et al. - 09/726,290

REAL PARTY IN INTEREST

The real party in interest in this appeal is the following party: International Business Machines Corporation.

RELATED APPEALS AND INTERFERENCES

With respect to other appeals or interference's that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal, there are no such appeals or interference's.

STATUS OF CLAIMS

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application are: 1-36

B. STATUS OF ALL THE CLAIMS IN APPLICATION

1. Claims canceled: NONE
2. Claims withdrawn from consideration but not canceled: NONE
3. Claims pending: 1-36
4. Claims allowed: NONE
5. Claims rejected: 1-36

C. CLAIMS ON APPEAL

The claims on appeal are: 1-36

STATUS OF AMENDMENTS

An Amendment after Final Rejection was not filed. Therefore, claims 1-36 on appeal herein are as amended in the Response to Office Action filed March 11, 2004.

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention, as recited in claim 1 on Appeal, is directed to a method for updating system firmware in a system component within a data processing system. The invention may be implemented in a data processing system such as data processing system 100 illustrated in Figure 1, and described from page 5, line 4 to page 7, line 1. As best illustrated in Figure 2, System Power Control Network (SPCN) cards 220-226 are provided in input/output drawers 210-216. Each SPCN card 220-226 contains a SPCN flash memory 230-236 that contains SPCN firmware (page 8, lines 12-16) to be updated with new SPCA firmware 204 stored in flash memory 202 (page 8, lines 5-10).

As described on page 2, lines 5-12 of the specification:

This SPCN firmware typically takes 45 minutes to complete for a four (4) drawer computer system. If there are more drawers in the system, then it will take longer than 45 minutes to update. Currently, the operating system cannot be loaded until this firmware update is finished. Thus, the user may have to wait an hour or more before the system is usable.

In accordance with the present invention, accordingly, updating firmware, such as SPCN firmware, is delayed until a notification is received that control has been transferred to a host operating system or until an operating system has been loaded, following completion of an initialization procedure. With the present invention, therefore, the service processor and the SPCN cards are available to assist the system firmware in the initialization procedure. After control has been transferred to a host operating system or after the operating system has been loaded, following completion of the initialization procedure, the service processor is no longer needed by the system firmware, and may then be used to update the SPCN firmware in the background while the data processing system is available to a user for other actions.

As further recited in claim 1, in response to receiving a notification that control has been transferred to a host operating system following completion of an initialization procedure (Page 12, lines 18-21, Step 310 in Figure 3), a service processor 201 (Figure 2) determines whether the system component, the SPCN cards, has a current level of the firmware (Page 12, line 27-Page 13, line 2, Steps 312-316 in Figure 3). In response to a determination that the system component does not have the current level of the firmware, a copy of the firmware stored in the

system component is updated with the new SPCA firmware 204 (Page 13, lines 6-10, No output of Step 316 in Figure 3). The updating is performed in a background operation while the data processing system remains available to a user for other actions (Page 12, lines 18-26).

Independent claim 7 is also directed to a method for updating system firmware in a data processing system. As recited in claim 7, in the background, and responsive to receiving a notification that an operating system has been loaded following completion of an initialization procedure (Page 12, lines 18-21, Step 310 in Figure 3), a determination is made whether a level of a firmware copy on a system component matches a current level of firmware stored on a non-volatile memory within the system (Page 12, line 27-Page 13, line 2, Steps 312-316 in Figure 3). Responsive to a determination that the level of the firmware copy is different from the current level (Page 13, lines 6-10, No output of Step 316 in Figure 3), transferring the current level of firmware to the system component to update the firmware copy on the system component.

Independent claims 13 and 19 are directed to a computer program product in a computer readable medium for updating firmware in a system component. Independent claim 13 is a computer program product claim counterpart to claim 1, and independent claim 19 is a computer program product claim counterpart to claim 7.

Independent claims 25 and 31 are directed to a system for updating firmware in a system component. Independent claim 25 is a system claim counterpart to claim 1, and independent claim 31 is a system claim counterpart to claim 7. In claims 25 and 31, the first means and the second means correspond to system processor 201 (page 12, line 18 to page 13, line 21).

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1, 3, 4, 6, 7, 10, 12, 13, 15, 16, 18, 19, 22, 24, 25, 27, 28, 30, 31, 34 and 36 are unpatentable under 35 U.S.C. 103(a) over Appellant's admission of prior art on pages 1 and 2 of the specification (APA), in view of U.S. Patent No. 5,822,692 (Krishnan).

2. Whether claims 2, 8, 14, 20, 26 and 32 are unpatentable under 35 U.S.C. 103(a) over Appellant's admission of prior art on pages 1 and 2 of the specification (APA), in view of U.S. Patent No. 5,822,692 (Krishnan) and U.S. Patent No. 6,357,021 (Kitigawa).

3. Whether claims 5, 11, 17, 23, 29 and 35 are unpatentable under 35 U.S.C. 103(a) over Appellant's admission of prior art on pages 1 and 2 of the specification (APA), in view of U.S. Patent No. 5,822,692 (Krishnan) and "Programming Embedded Systems in C and C++" by Michael Barr and published in January, 1999 (Barr).

4. Whether claims 9, 21 and 33 are unpatentable under 35 U.S.C. 103(a) over Appellant's admission of prior art on pages 1 and 2 of the specification (APA), in view of U.S. Patent No. 5,822,692 (Krishnan), U.S. Patent No. 6,357,021 (Kitigawa), and "Computer Users Dictionary" published by Microsoft Press in 1998 (Microsoft)

ARGUMENT

I. 35 U.S.C. § 103, Obviousness, Claims 1, 3, 4, 6, 7, 10, 12, 13, 15, 16, 18, 19, 22, 24, 25, 27, 28, 30, 31, 34 and 36

The Examiner has rejected claims 1, 3, 4, 6, 7, 10, 12, 13, 15, 16, 18, 19, 22, 24, 25, 27, 28, 30, 31, 34 and 36 under 35 U.S.C. § 103(a) as being unpatentable over Appellants' admission of prior art on pages 1 and 2 of the specification (APA), in view of U.S. Patent No. 5,822,692 to Krishan et al. (Krishnan).

In rejecting the claims as being unpatentable over APA in view of Krishan, the Examiner states:

As per claim 1, APA discloses:

Determining, by a service processor, whether a system component has a current level of the firmware (page 1 line 32 - page 2 line 5: "At this time, the SPCN task will read the SPCN firmware level (i.e. version) on the service processor flash. If that firmware level does not match with the level of firmware on the SPCN card, then the SPCN task will transmit a new SPCN firmware image to the SPCN card while the OS is running." The SPCN task is run by the service processor.); and

responsive to a determination that the system component does not have the current level of the firmware, updating a copy of the firmware stored in the system component (page 2 lines 2-5 as cited above).

APA does not disclose updating after transferring control to a host operating system in a background operation while the data processing system remains available to a user for other actions.

However, in an analogous environment, Krishnan teaches updating the firmware on a PCMCIA device (column 16 lines 8-10: "If the host has a newer version of the firmware, it transmits the newer version to data communication device 10 via TDX line 140.") The operation of transmitting is inherently performed under the control of a host operating system that conforms to the PCMCIA standard. Furthermore, operation of a PCMCIA device inherently allows the device to be powered on, powered off, and updated in a background operation of the host operating system according the PCMCIA standard (note that further information regarding PCMCIA technology can be found in "An Introduction to PCMCIA and PC Card Technology" by Synchrotech).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the firmware update method of APA with Krishan's background update. One of ordinary skill in the art would have been motivated to update the firmware of a device independently in a background operation of the host operating system.

Office Action dated December 18, 2003, pages 2 - 3.

Krishan is directed to a data communication device, such as a pager or e-mail receiver, that can be connected to a host computer. Among other features of the data communication device, Krishan discusses a procedure by which firmware of the device can be updated. In particular, in column 16, lines 14-33, Krishan recites:

Referring again to FIG. 4C, in normal operation radio frequency controller circuit 80 will execute the instructions loaded into program memory 81, while data memory 82 is used to store data. However, during the process of updating the firmware, radio frequency controller circuit 80 toggles multiplexer 84, to switch ROM_OE line 179 and RAM_OE line 180 and to switch terminals 181 and 182. As a result, radio frequency controller circuit 80 temporarily executes the instructions in data memory 82, rather than in program memory 81. Updating instructions in data memory 82, which were transmitted with the new firmware, direct radio frequency controller circuit 80 to load the new firmware from data memory 82 into program memory 81, thereby updating the firmware for radio frequency controller 46. After program memory 81 has been updated, the updating instructions in data memory 82 direct radio frequency controller circuit 80 to run a reinitiation routine, during which multiplexer 84 is returned to its initial setting. After running the reinitiation routine, the updating of the firmware of radio frequency circuitry 36 is complete.

In Krishan, it is an objective to update firmware in a data communication device by, for example, downloading the updated firmware from a host. The reference does not discuss any conditions that must be satisfied before updating can occur. In the present invention, on the other hand, firmware in a data processing system is updated responsive to receiving a notification that control has been transferred to a host operating system or that an operating system has been loaded, following an initialization procedure.

Independent claim 1 reads as follows:

1. A method of updating firmware in a system component within a data processing system, the method comprising:
 - responsive to receiving a notification that control has been transferred to a host operating system following completion of an initialization procedure, determining, by a service processor, whether the system component has a current level of the firmware; and
 - responsive to a determination that the system component does not have the current level of the firmware, updating a copy of the firmware stored in the system component in a background operation while the data processing system remains available to a user for other actions.

Neither APA nor Krishan discloses or suggests the step of "responsive to receiving a notification that control has been transferred to a host operating system following completion of an initialization procedure, determining, by a service processor, whether the system component has a current level of the firmware", and then updating the firmware responsive to a determination that the system component does not have the current level of the firmware. Therefore, the combination of APA and Krishan does not teach or suggest the present invention, and claim 1 should be allowable in its present form.

Claims 3, 4 and 6 depend from and further restrict claim 1, and should also be allowable in their present form, at least by virtue of their dependency.

Independent claims 13 and 25 have been amended in a manner similar to claim 1, and should also be allowable in their present form, together with claims 15, 16, 18, 27, 28 and 30 depending therefrom.

Independent claim 7 reads as follows:

7. A method for updating system firmware in a data processing system, the method comprising:

in the background, and responsive to receiving a notification that an operating system has been loaded following completion of an initialization procedure, determining whether a level of a firmware copy on a system component matches a current level of firmware stored on a non-volatile memory within the system; and

responsive to a determination that the level of the firmware copy is different from the current level, transferring the current level of firmware to the system component to update the firmware copy on the system component.

For similar reasons as discussed above with respect to claim 1, neither APA nor Krishan discloses or suggests the step of "responsive to receiving a notification that an operating system has been loaded following completion of an initialization procedure, determining whether a level of a firmware copy on a system component matches a current level of firmware stored on a non-volatile memory within the system. Accordingly, claim 7 should also be allowable in its present form, together with claims 10 and 12 dependent thereon.

Independent claims 19 and 31 have been amended in a manner similar to claim 7, and should also be allowable in their present form, together with claims 22, 24, 34 and 36 dependent thereon.

Therefore, claims 1, 3, 4, 6, 7, 10, 12, 13, 15, 16, 18, 19, 22, 24, 25, 27, 28, 30, 31, 34 and 36 are believed to patentably distinguish over APA in view of Krishnan; and it is respectfully requested that the Board reverse the Examiners Final Rejection of the claims.

II. 35 U.S.C. § 103, Obviousness, Claims 2, 8, 14, 20, 26 and 32

Claims 2, 8, 14, 20, 26 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA and Krishan, and further in view of U.S. Patent No. 6,357,021 to Kitagawa et al. (hereinafter "Kitagawa"). Kitagawa is cited as disclosing notifying a user of a firmware update failure.

Kitagawa, however, does not supply the deficiencies in APA and Krishan as discussed above, and claims 2, 8, 14, 20, 26 and 32 should be allowable in their present form, at least, by virtue of their dependency, and it is respectfully requested that the Board reverse the examiner's Final Rejection of those claims.

III. 35 U.S.C. § 103, Obviousness, Claims 5, 11, 17, 23, 29 and 35

Claims 5, 11, 17, 23, 29 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA and Krishan, and further in view of "Programming Embedded Systems in C and C++" by Michael Barr (hereinafter "Barr"). Barr is cited as disclosing a non-volatile random access memory to store data.

Barr, however, does not supply the deficiencies in APA and Krishan as discussed above, and claims 5, 11, 17, 23, 29 and 35 should be allowable in their present form, at least, by virtue of their dependency, and it is respectfully requested that the Board reverse the examiner's Final Rejection of those claims.

IV. 35 U.S.C. § 103, Obviousness, Claims 9, 21 and 23

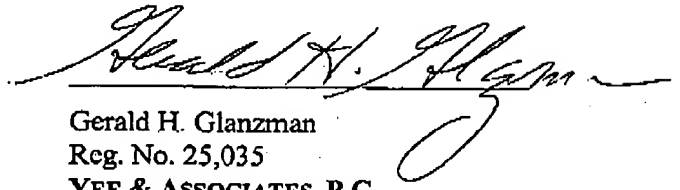
Claims 9, 21 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA, Krishan and Kitagawa, and further in view of "Computer User's Dictionary" by Microsoft Press (hereinafter "Microsoft"). Microsoft is cited as teaching the definition of a "log file".

The Microsoft document, however, does not supply the deficiencies in the principal references, as described above, and claims 9, 21 and 33 should be allowable in their present

form, at least, by virtue of their dependency, and it is respectfully requested that the Board reverse the Examiner's Final Rejection of those claims.

CONCLUSION

For all the above reasons, Appellants submit that the Final Rejection of claims 1-36 is improper, and respectfully request that the Final Rejection be reversed.



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